

REMARKS

By this amendment claims 8, 9, and 15 has been amended. Claims 2-4, 10, 13, 14, and 22-40 were previously cancelled. Claims 1, 5-9, 11, 12, 15-21, 41, and 42 are pending in the present application.

Claims 1, 5-9, 11, 12, 15-21, 41, and 42 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ball (U.S. 5,291,061) in view of Wark (U.S. 5,696,031). Applicants respectfully traverse this rejection.

In order to establish a prima facie case of obviousness, there must be some motivation in the prior art to modify or combine the cited references. MPEP §2142. The Office Action states that it would have been obvious to modify Ball by using the location of the at least one electrical contact area, the bottom surface of the second semiconductor die to be smaller area than the top surface of the first semiconductor die, and the electrical communication between the first and second dice as taught by Wark. (Office Action, page 4, top.). Applicant respectfully disagrees. Instead, Applicant submits that there is no motivation to modify Ball with the teachings of Wark. In fact, the references teach away from the proposed modification.

Ball relates to a multiple die module that has two or more stacked dice. (Ball, column 1, lines 5-8.) Ball teaches a stacked die device 10 in which each die is connected to lead fingers 28 and is bonded to another die with a thermoplastic-adhesive layer 22. Ball asserts that a drawback to the prior art is that "[t]he lower die needs to be slightly larger" than the upper die, and shows, in Fig. 2, each die having the same size. Ball also teaches lead fingers for electrical connections arranged such that all dice may be of the same size. (Ball column 3, lines 1-2 and Fig. 2.) Thus, Ball cannot directly connect one die to another. Accordingly, Ball does not teach or suggest "a first semiconductor die,

... at least one second semiconductor die, ... said top surface of said first semiconductor die having at least one electrical contact area at a distance outside said perimeter of said at least one second semiconductor die, said at least one second semiconductor die being in electrical communication with said at least one electrical contact area."

Wark teaches a lower die larger than an upper die. (Wark, Fig. 2.) Ball teaches just the opposite, that it is undesirable to have a lower die larger than an upper die. It is clear that one of ordinary skill in the art would not have been motivated to combine the teachings of Ball and Wark as suggested by the Examiner, since the teachings of the two references are in direct conflict with each other. An advantage of the present invention is that electrical connections are made without wasting space due to adhesive fillets or additional lead structures. An upper die may be made larger than was possible in prior art or a lower die may be made smaller, in both cases maximizing usable area on the dice. For at least these reasons, the rejection of claim 1, and claims 5-9, which depend from claim 1, should be withdrawn.

In addition, neither Ball nor Wark, even when considered in combination, teach or suggest all limitations of amended claim 15. Specifically, Ball and Wark fail to teach or suggest "a distance between said electrical connection point and said perimeter of said second semiconductor die is less than or equal to about 428 microns and greater than zero microns," as mentioned by amended independent claim 15. Both Ball and Wark are silent about a distance between a connection point and a perimeter of any structure. For at least these reasons, the rejection of claim 15 should be withdrawn. Claims 16-21 should be allowable as well, since they are dependent on claim 15. Claims 8 and 9 have been amended in the same way as claim 15, and should therefore also be allowable.

Claim 41 recites “a support structure having a top surface, ... a first semiconductor die, ... said top surface of said support structure having at least one electrical contact area at a distance outside said perimeter of said at least one semiconductor die, said at least one semiconductor die being in electrical communication with said at least one electrical contact area.” As discussed above, Ball does not teach or suggest such a limitation. The paddle 14 in Ball is shown as having the same size as the dice above it. (Ball, Fig. 2.) There is no electrical contact between the dice and the support structure. Wark teaches a support structure larger than an upper die, but as discussed above, Ball teaches away from that limitation. A person skilled in the art would not be motivated to combine the references, since the two references are in direct conflict with each other. Therefore, the rejection of claim 41 should be withdrawn.

Claim 42 recites “a support structure having a top surface, ... a first semiconductor die, ... said top surface of said support structure having at least one electrical contact area at a distance outside said perimeter of said at least one semiconductor die, said at least one semiconductor die being in electrical communication with said at least one electrical contact area.” As previously asserted, Ball does not teach or suggest such a limitation. The paddle 14 in Ball is shown with the same size as the dice stacked above. (Ball, Fig. 2.) There is no electrical contact between the dice and the support structure. Wark teaches a support structure larger than an upper die, but as previously asserted, Ball teaches away from that limitation. A person skilled in the art would not be motivated to combine the references, since the two references are in direct conflict with each other. Therefore, the rejection of claim 42 should be withdrawn.

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In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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